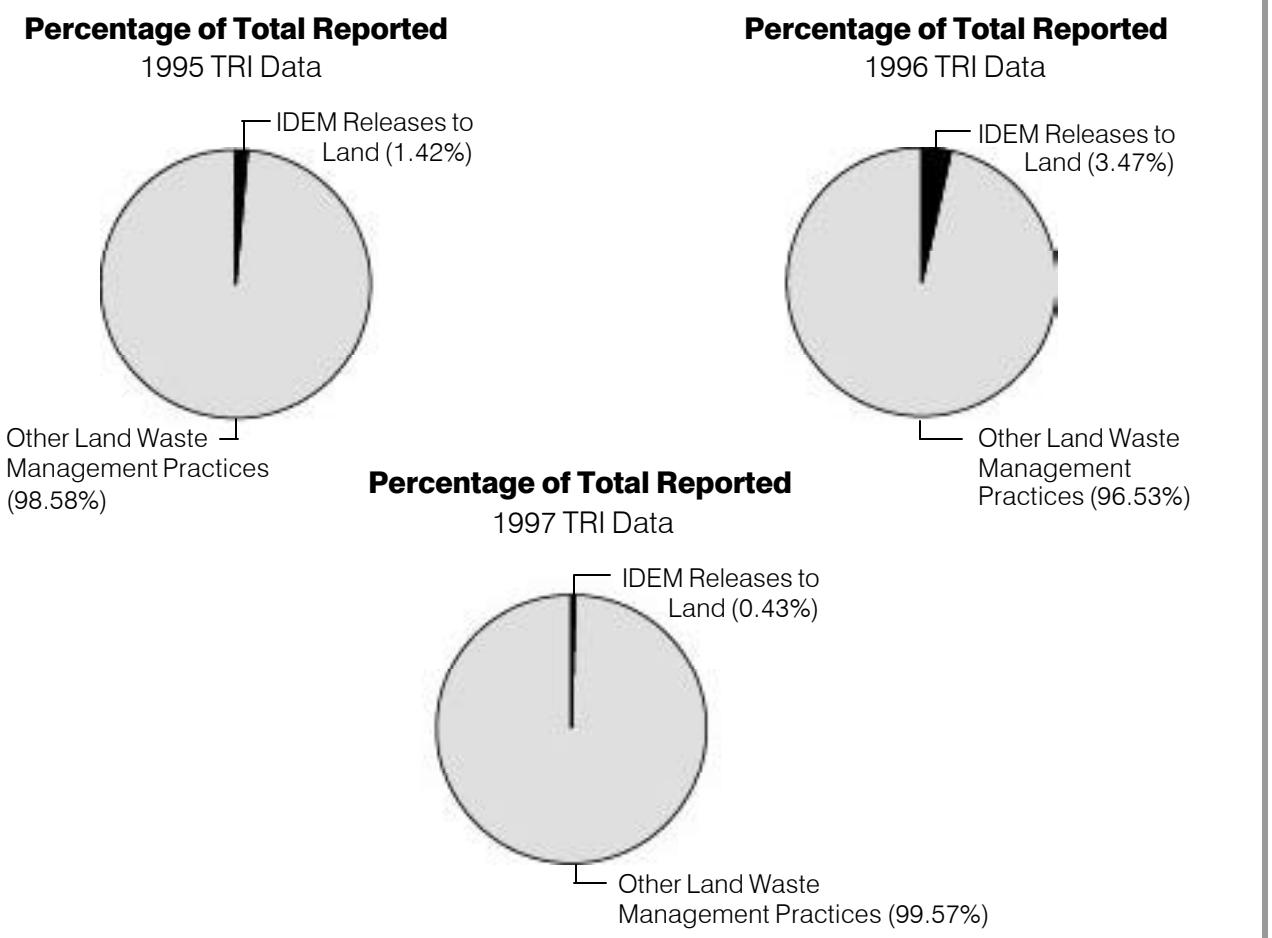
Comparison of Viewpoints on Land Release Data (1995-1997)



When reporting land release information using the Form R reporting form, the U.S. Environmental Protection Agency identifies five different practices that are considered releases to the land. The five categories of land releases are transfers to:

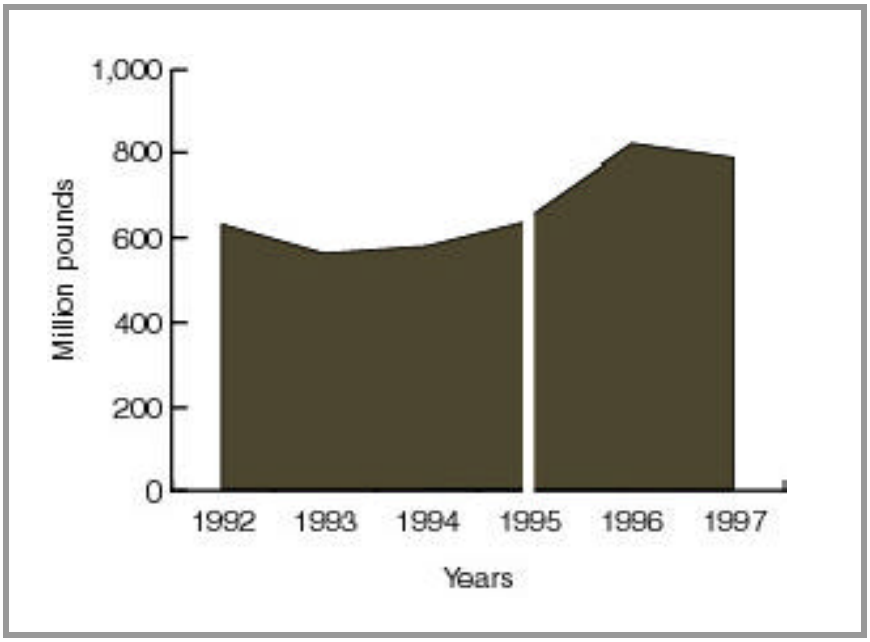
1) RCRA Subtitle C,
2) Other permitted landfills,
3) Surface impoundments,
4) and spills and releases, or
5) Land application of waste.

In the 1997 Toxic Release Inventory Annual Report, OPPTA took the position to not consider transfers to RCRA Subtitle C and "other" permitted landfills as "true" releases to land. These facilities are highly regulated, designed not to cause a release, are considered waste management practices, and were therefore not considered a "true" release to land. Thus in the earlier reports, the amounts reported under these two categories were removed from the OPPTA TRI database. The pie charts represent the percentage of the total reported land release values that were included in our reports.

In order to get a better understanding of what impact this has on Indiana's release totals, the above pie graphs were created. In 1995, 1.42 percent (97,437 pounds) of the total land releases reported were counted by IDEM as "true" releases to land. For 1996, the percentage rose to 3.47 percent (295,197 pounds). Finally, in 1997, the percentage dropped to 0.43 percent (75,112 pounds). However, the difference in reported land releases has been approximately 6.7 million pounds in 1995, 7.9 million pounds in 1996, and 17.1 million pounds in 1997. In order to eliminate confusion, OPPTA will no longer differentiate between reported land release values.

All Environmental Waste Reporters (1992-1997)

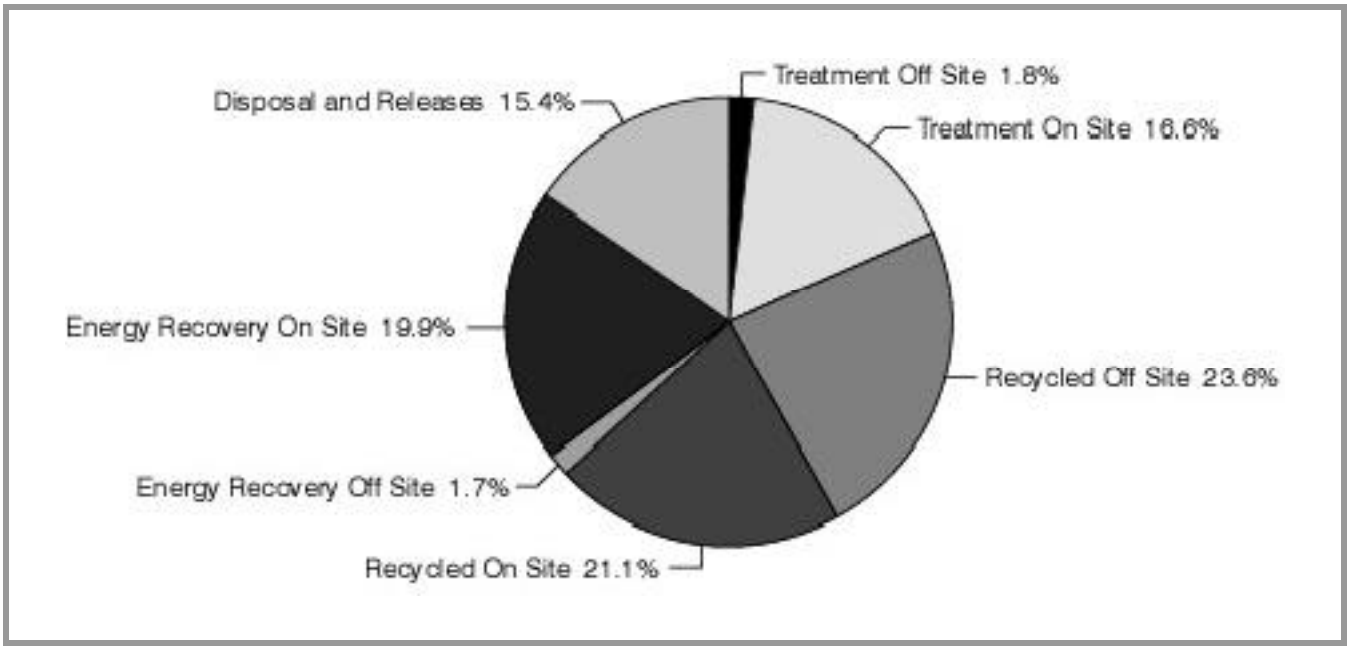
In 1995, the U.S. Environmental Protection Agency added 300 new chemicals to the list of TRI reportable chemicals. Of these, 20 compounds were reported in Indiana. The break in the chart indicates this change in reporting requirements. Since 1995 is the year of change, there are two data points for the year to allow for consistency when trending the data. The data point to the left represents the total environmental waste generated using the "old" list of reportable chemicals. And the data point on the right represents the "new" list of chemicals. OPPTA believes that this approach to trending the TRI data allows for an "apples to apples" comparison and leads to a better representation of how TRI release data are trending from year to year.



Activity Index

Annual:	92-93: +5%	95-96: +3%
	93-94: +18%	96-97: +20%
	94-95: -12%	
Overall:	+35%	

All 1997 Reporters (By Waste Management Technique)



From 1992 to 1995, Indiana manufacturers reported a 1.2 percent increase in reported environmental waste. However, during this same time period Indiana manufacturers' activity increased 11 percent. The increase in waste reported was 15 percent between 1995 and 1996, and in report year 1997 there was a 3 percent reduction reported. Overall the total amount of environmental waste reported by Indiana manufacturers in 1997 (approximately 790,000,000 pounds) is 2% higher than what was reported in 1995 (approximately 775,000,000 pounds) including the new chemicals. Overall, from 1992 to 1997, Indiana manufacturers made progress in terms of their reported environmental waste and reported activity. Manufacturers' environmental waste generation increased by 27 percent, while manufacturing activity increased by 35 percent during this same time period.

Since 1991, Indiana manufacturers have reported environmental wastes in seven categories: disposal and releases, energy recovery on- and off-site, recycling on- and off-site, and treatment on- and off-site. From 1995 to 1997, Indiana manufacturers had a significant shift from recycling to energy recovery. The percentage of environmental waste reported as recycled (both on- and off-site) decreased from approximately 64 percent in 1995 to 45 percent in 1997. Meanwhile, the percentage of environmental waste reported as energy recovered (both on- and off-site) increased from 8 percent in 1995 to almost 21 percent in 1997. Much of the reported energy recovery values come from reporters with a primary Standard Industrial Code 32.

1997 Top 10 Environmental Waste Reporters

Rank	Facility (county)	Pounds
1	ESSROC Cement Corp. (Cass)	61,575,973
2	Reilly Industries Inc. (Marion)	43,466,581
3	Lone Star Industries Inc. (Putnam)	40,629,668
4	USS Gary Works (Lake)	40,414,090
5	General Electric Plastics (Posey)	34,784,353
6	ALCOA, Warrick Operations (Warrick)	34,015,076
7	General Battery/Exide Corp. (Delaware)	31,371,488
8	Eli Lilly Clinton Labs (Vermillion)	26,009,685
9	Vitamins Inc. (LaPorte)	25,310,000
10	Tippecanoe Laboratories (Tippecanoe)	22,215,389

Since the 1995 TRI Annual Report, the top 10 environmental waste generators list has changed significantly. Based on 1997 data, five Indiana facilities (Preferred Technical Group Incorporated in Whitley County, Delphi Automotive Systems in Delaware County, Exide Corporation in Clinton County, Essex Group Inc. - Plant 55 in Whitley County and Mascotech Stamping Technologies Incorporated in Noble County) dropped off of the top 10 environmental waste generators list. Their replacements are Lone Star Industries Incorporated in Putnam County; USS Gary Works in Lake County; General Battery/Exide Corporation in Delaware County; Vitamins, Inc. in LaPorte County and Tippecanoe Laboratories in Tippecanoe County. The replacements reported a combined increase in environmental waste of approximately 107 million pounds while the facilities dropping out of the top 10 reported a combined decrease of environmental waste of approximately 84 million pounds.

1997 Top 10 Environmental Waste Reporting Industrial Sectors

Rank	SIC CODE	Industry	Pounds
1	33	Primary Metal	272,283,422
2	28	Chemicals & Allied Products	138,984,602
3	32	Stone, Clay, Glass and Concrete Products	102,921,433
4	34	Fabricated Metal Products	67,886,027
5	37	Transportation Equipment	30,320,464
6	36	Electronic and Components	29,448,889
7	29	Petroleum Refining and Related Industries	19,447,606
8	30	Rubber and Plastic Products	12,783,920
9	35	Industrial and Commercial Machinery	7,097,361
10	25	Furniture and Fixtures	5,887,220

Since the 1995 reporting year, the makeup of the top 10 environmental waste reporting industrial sectors has remained the same except for the Furniture and Fixtures (Standard Industrial Code 25) industry, which replaced Printing, Publishing and Allied Industries (Standard Industrial Code 27). There was a decrease in total environmental waste reported from 1996 to 1997, but an overall increase occurred from 1995 to 1997. Consistent with this overall increase in environmental waste, five of the top 10 sectors increased their total pounds of environmental waste from 1995 to 1997. The biggest apparent increase in reported environmental waste between 1995 and 1997 came from Standard Industrial Code 32 - Stone, Clay, Glass and Concrete Products, with an increase of approximately 93 million pounds.

ESSROC Cement Corp. in Cass County was not included in the environmental waste quantities used in the 1997 TRI Annual Report. Adding the exclusion back in increased Standard Industrial

Code 32's total environmental waste by over 60 million pounds from 1995 TRI numbers. We added ESSROC's reported values in to this report, which is partially responsible for the increase. We also saw an increase in reported energy recovery values from other "cement kilns." For example, Lone Star Industries Inc. in Putnam County reported an increase in environmental waste of over 30 million pounds used for energy recovery from 1995 to 1997.

Indiana Facilities Reporting More Than 20 Million Pounds in at Least One Reporting Year

Facility (county)	1991	1992	1993	1994	1995	1996	1997
ALCOA Warrick Operations (Warrick)	X	X	X	X	X	X	X
Delphi Automotive Systems (Delaware)			X	X			
Delta Faucet Company (Decatur)						X	X
Eli Lilly Clinton Labs (Vermillion)	X	X	X		X	X	X
Eli Lilly Tippecanoe Labs (Tippecanoe)	X	X	X				X
Essex Group Inc. - Plant 55 Metals Processing (Whitley)					X	X	
ESSROC Cement Corp. (Cass)					X	X	X
Exide Corporation (Clinton)	X			X	X	X	
Ferro Corp., Kiel Div. (Lake)	X						
General Battery/Exide Corp. (Delaware)							X
General Electric Plastics (Posey)					X	X	X
Inland Steel Co. (Lake)	X	X					
Lone Star Industries Inc. (Putnam)	X	X	X			X	X
Mascotech Stamping Technologies Inc. (Noble)					X	X	
Preferred Technical Group (Lawrence)	X	X	X				
Preferred Technical Group (Whitley)		X	X	X			
Reilly Industries Inc. (Marion)	X	X	X	X	X	X	X
Rhone Poulenc Inc. (Lake)	X	X					
USS Gary Works (Lake)						X	X
Vitamins Inc. (LaPorte)						X	

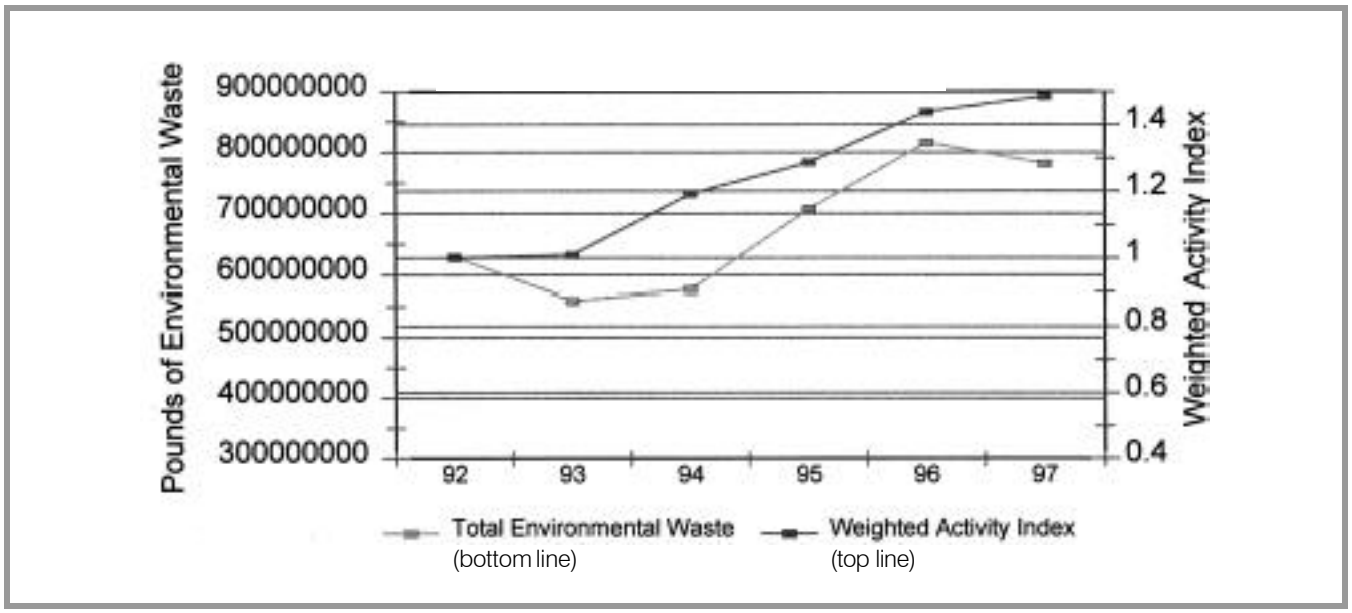
To be included in the list of large environmental waste reporters a facility must have reported more than 20 million pounds of at least one reportable chemical, in at least one year. Twenty (20) million pounds was chosen as a threshold because of the significant gap between the number of companies reporting over 20 million pounds of environmental waste and those companies reporting under 20 million pounds. The change in the list of facilities between years is often associated with fluctuations in production.

Since the 1991 reporting year, twenty facilities in at least one year have reported 20 million pounds of environmental waste. Of the twenty, three facilities (Ferro Corporation - Kiel Division, Rhone Poulenc Inc. and Inland Steel Company, all in Lake County) have not exceeded 20 million pounds of environmental waste in at least one year since the 1992 reporting year. Also, five facilities (ESSROC Cement Corp. in Cass County, General Battery/ Exide Corp. in Delaware County, USS Gary Works in Lake County, Delta Faucet Company in Decatur County and Vitamins Inc. in LaPorte County) have been added to the list since the 1995 reporting year. ESSROC and USS Gary Works were excluded from the 1997 TRI Annual Report and the list of large generator category because of changes in their respective reporting basis. Vitamins Incorporated recycled on-site over 20 million pounds of N-hexane in 1996 and 1997 to make the list. Delta Faucet Company exceeded the 20 million pound

threshold in 1996 and 1997 after reporting zinc compounds in environmental waste in excess of 7 million pounds each year. Finally, General Battery/ Exide Corp. exceeded the threshold because of increased recycling on- and off-site of lead compounds.

The list has been updated to reflect revisions received since the 1997 TRI Annual Report was published. Because of submitted revisions, four facilities (Bethlehem Steel Corp. and National Steel Corp. in Porter County, National Processing Corp. in Lake County and NUCOR Steel in Montgomery County) have dropped off of the 20 million pound list.

Environmental Waste (Compared to Production)



NOTE: Gap is proportional to pollution prevention progress.

This graph demonstrates an approach to measuring pollution prevention progress using Toxic Release Inventory data. The bottom line demonstrates the trend in reported environmental waste values from 1992 to 1997. The large increase between 1994 and 1995 is partially due to the addition of 300 new chemicals to the TRI list of reportable chemicals.

The top line demonstrates the trend in the "weighted activity index" reported by all Indiana facilities. For each chemical report submitted, there is a production ratio that is to be calculated based on the use of that specific chemical at that facility compared to the previous year. The production ratio is used to determine if a facility is more efficiently using a particular chemical from one year to the next. For example, if a company reports a production ratio of 1.0 in 1996 and a production ratio of 1.2 in 1997 for the same chemical used in the same process, this would indicate a 20 percent increase in production associated with the use of that specific chemical compared to the previous year's production.

Indiana measures pollution prevention progress for manufacturers using the TRI Program. It compares the annual change in toxic chemicals in environmental waste with the annual change in production. The percent change in production minus the percent change in waste is the net pollution prevention progress. Using this equation, the overall pollution prevention progress demonstrated by the graph between 1995 to 1997 is 15 percent.

The Office of Pollution Prevention and Technical Assistance will continue to refine this process to measure pollution prevention and recognizes its limitations (i.e., only captures TRI reporters, and changes in reporting requirements have an effect on the overall measurement).

Hazard Ranking

All toxic chemicals do not pose equal hazards. A pound of copper dust in the air is much less hazardous than a pound of cyanide compounds. Putting this difference on a similar scale is difficult. The hazard depends on how the chemical is handled, its toxicity and the methods by which people or the environment may be exposed to it.

The Clean Manufacturing Technology and Safe Materials Institute at Purdue University developed a scale of hazard factors that can be used to better understand the relative hazards associated with various chemicals. The hazard ranking factors consider the potential hazards of a chemical and its potential to be released into the environment. Chemicals are assigned a numerical value between 0 and 100. Multiplying the pounds of chemical released by the hazard factor gives better understanding of the hazards associated with one class of compounds relative to other classes.

Indiana Relative Chemical Hazard Score

The hazard factors change as data available for individual chemicals change. For the latest hazard factor, please access the Indiana Clean Manufacturing Technology and Safe Materials Institute Web page.

www.ecn.purdue.edu/CMTI

Top Ten List of All Chemicals by Releases and Associated Relative Hazpounds

Chemical Name	Releases	Chemical Hazard Score	Rel Hazpounds	Hazard Rank
AMMONIA	6,440,626	21.8	140,405,647	4
TOLUENE	6,181,675	29.1	179,886,743	1
XYLENE (MIXED ISOMERS)	5,832,689	26.1	152,233,183	2
DICHLOROMETHANE	4,786,750	29.0	138,815,750	5
STYRENE	4,369,553	32.7	142,884,383	3
METHYL ETHYL KETONE	2,872,992	27.9	80,156,477	6
METHANOL	2,155,608	24.7	53,243,518	8
GLYCOL ETHERS	2,125,210	20.5	43,566,805	10
TRICHLOROETHYLENE	1,750,809	39.4	68,981,875	7
CARBONYL SULFIDE	1,633,953	30.5	49,835,567	9